HammondAssociates
INSTITUTIONAL FUND CONSULTANTS, INC.

Kentucky Public Pension Working Group

Strategic Investment and Governance Review

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Richard P. Marra
Director of Corporate Retirement Plan Practice

Jerry Woodham
Director of Public Retirement Plans Practice

Hammond Associates
101 South Hanley Road, Third Floor
St. Louis, MO 63105-3406
314-746-1600
www.hammondassociates.com

Agenda

- Executive Summary
- Investment Policy
- Portfolio Management
- Effective Fund Governance

Executive Summary

- Working Group Investment Sub-committee's mandate: Examine and recommend appropriate investment benchmarks, policies and portfolio strategies based upon expected investment returns and asset allocations of comparable public pension plans and other institutional investment portfolios.
- Historic performance has been below the median of public pension systems and other institutional benchmarks.
- Historic risk (standard deviation) has been below the median of public pension systems and other institutional benchmarks.
- Objective: Further diversify the portfolios with the goal of improving returns and reducing risk.

Performance – Introduction

- Returns for both KRS and KTRS were analyzed over the trailing ten-year period ending June 30, 2008.
- Both KRS and KTRS have underperformed their peers over the past ten years.
- The benchmark used for comparison purposes was the Russell Mellon Public Funds Greater than $1 Billion universe.
  - The universe contains 58 funds with $944 billion in total assets.
  - The average size of a fund in the universe is $16.3 billion.

Opportunity Cost

What has been left on the table?

- The actual returns for KRS and KTRS were compared to the median return of the Russell Mellon universe to determine the excess return in comparison to the benchmark.
- In most periods measured excess return was negative, indicating underperformance.
- The excess return was applied to the average market value for the year.
- Assuming no compounding of the returns, the opportunity cost or lost return was as follows:
  - KRS - $1.2 billion
  - KTRS - $2.6 billion
- The possible determinants of this lost opportunity include:
  - Asset allocation
  - Manager selection.

Opportunity Cost *(continued)*

Asset Allocation (as of June 30, 2008)

- Equity allocation
  - KRS has the same 34% allocation to U.S. equity and 20% allocation to international equity as the median Russell Mellon universe allocation.
  - KTRS has a higher allocation to U.S. equity (55% versus 35%) and a lower allocation to international equity (9% versus 20%) than its peers.
- Fixed Income
  - Both the KRS (24%) and KTRS (33%) fixed income allocation (including cash) is close to that of the peer universe (34%)
- Alternative Assets
  - Both KRS (10%) and KTRS (4%) have a lower allocation to alternative assets than the Russell Mellon universe (14%).

Manager selection

- Manager selection is being analyzed and will be presented at an upcoming meeting.

Performance – KRS Pension Fund

	Period Ending June 30, 2008			
	1-Year	**3-Year**	**5-Year**	**10-Year**
KRS Pension Fund	***-4.2%***	***6.6%***	***8.5%***	***5.6%***
Median Return	-4.3%	8.4%	10.7%	6.6%
Excess Return	0.1%	-1.8%	-2.2%	-1.0%
Quartile Ranking	2nd	3rd	4th	3rd

- Kentucky Retirement Systems' returns have ranged between the second and fourth quartiles of the Russell Mellon Public Pension Plan Greater than $1 Billion Universe over the last 1, 3, 5 and 10-year periods ending June 30, 2008.
- Peer performance has improved recently moving, ranking in the second quartile of the RM universe over the past year.
- Over the past ten years KRS has underperformed the median return for the Russell Mellon universe by 100 basis points.
- The underperformance relative to the universe median represents an opportunity cost of approximately $1.0 billion in lost returns which could have been added to the Fund's asset base.
- The KRS Pension Fund has an actuarial assumed rate of return of 7.75%.

Performance – KRS Insurance Fund

	Period Ending June 30, 2008			
	1-Year	3-Year	5-Year	10-Year
KRS Insurance Fund	***-7.9%***	***7.3%***	***10.1%***	***5.5%***
Median Return	-4.3%	8.4%	10.7%	6.6%
Excess Return	-3.6%	-1.1%	-0.6%	-1.1%
Quartile Ranking	4th	3rd	3rd	3rd

- Kentucky Retirement Systems' returns have ranged been either in the third or fourth quartile of the Russell Mellon Public Pension Plan Greater than $1 Billion Universe over the last 1, 3, 5 and 10-year periods ending June 30, 2008.
- Over the past ten years KRS has underperformed the median return for the Russell Mellon universe by 110 basis points.
- The KRS Insurance Fund has an actuarial assumed rate of return of 7.75%.

Performance – KTRS

	Period Ending June 30, 2008			
	1-Year	3-Year	5-Year	10-Year
KTRS	***-5.8%***	***4.6%***	***6.2%***	***4.5%***
Median Return	-4.3%	8.4%	10.7%	6.6%
Excess Return	-1.5%	-3.8%	-4.5%	-2.1%
Quartile Ranking	4th	4th	4th	4th

- Kentucky Teachers' Retirement Systems' returns have ranked in the fourth quartile of the Russell Mellon Public Pension Plan Greater than $1 Billion Universe over the last 1, 3, 5 and 10-year periods ending June 30, 2008.
- Over the past ten years KTRS has underperformed the median return for the Russell Mellon universe by 210 basis points.
- The underperformance relative to the universe median represents an opportunity cost of approximately $2.6 billion in lost returns which could have been added to the Fund's asset base.
- KTRS has an assumed actuarial rate of return of 7.5%.

Public Pension Plan Return Data

- The table below shows return data for comparable pension plans ranked according to their 5-year return as of June 30, 2007.

	Plan Size ($ in 000s)	Period Ending June 30, 2007		
		1-Year	3-Year	5-Year
Pennsylvania Public School Employees Retirement System	$57,235,667	22.9%	16.9%	14.5%
Oregon Employees Retirement System	54,343,197	18.6%	15.6%	13.4%
Virginia Retirement System	47,626,713	20.4%	14.9%	12.8%
Idaho Public Employee Retirement System	9,444,217	20.0%	14.3%	12.8%
Oklahoma Teachers Retirement System	7,858,937	18.5%	12.8%	12.8%
Louisiana State Employees Retirement System	8,008,508	19.2%	13.7%	12.6%
Illinois Teachers Retirement System	36,584,889	19.2%	13.9%	12.5%
Kansas Public Employees Retirement System	12,352,890	18.0%	14.1%	12.3%
Ohio State Teachers Retirement System	62,126,074	19.5%	14.3%	12.2%
Minnesota State Retirement System	9,495,641	18.3%	13.8%	11.9%
New Mexico Public Employees Retirement Association	11,369,196	18.1%	13.2%	11.7%
Hawaii Employees Retirement System	9,932,411	17.7%	13.3%	11.7%
Maine State Retirement System	9,572,783	16.2%	11.8%	11.4%
Maryland State Retirement and Pension System	34,370,819	17.6%	12.4%	11.3%
Texas Employees Retirement System	22,442,493	13.9%	11.8%	11.2%
Arizona State Retirement System	23,415,648	17.8%	11.9%	11.0%
Oklahoma Public Employees Retirement System	5,817,166	16.4%	11.6%	10.9%
Illinois State Employees Retirement System	10,899,853	17.1%	12.6%	10.8%
Kentucky Retirement Systems	*12,950,226*	*15.3%*	*11.4%*	*10.4%*
North Carolina Retirement Systems	66,665,317	14.8%	10.6%	10.3%
Georgia Employees Retirement System	15,930,531	14.7%	9.5%	8.5%
Georgia Teachers Retirement System	47,246,347	NA	9.5%	8.5%
Kentucky Teachers Retirement System	*13,851,411*	*15.2%*	*9.3%*	*8.5%*
High		22.9%	16.9%	14.5%
Mean		17.7%	12.8%	11.5%
Median		17.9%	12.8%	11.7%
Low		13.9%	9.3%	8.5%

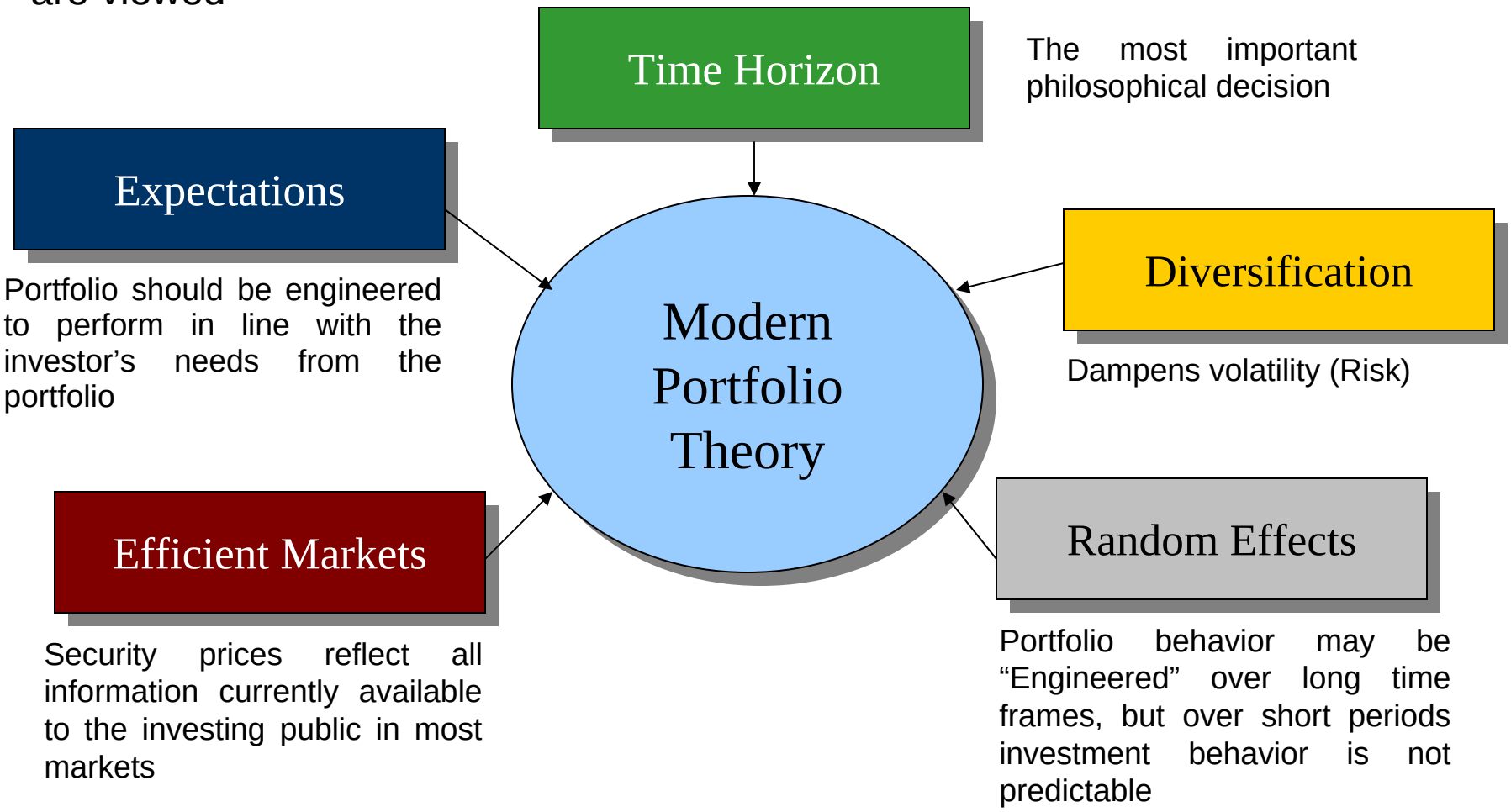
Note: Returns shown for Kentucky Retirement Systems represent only the returns for the Pension Fund.

Peer Ranking Analysis

- The key metric in performance measurement is the long-term target return.
- Pension plans cannot manage with top quartile performance as the goal. Top quartile performance is the result of good management.
- Peer rankings provide some insight as to what similar institutional investors are doing.
- Consistently low peer rankings, at a minimum, should serve as notice to review both your policy and the policies of the top performing funds (long-term).

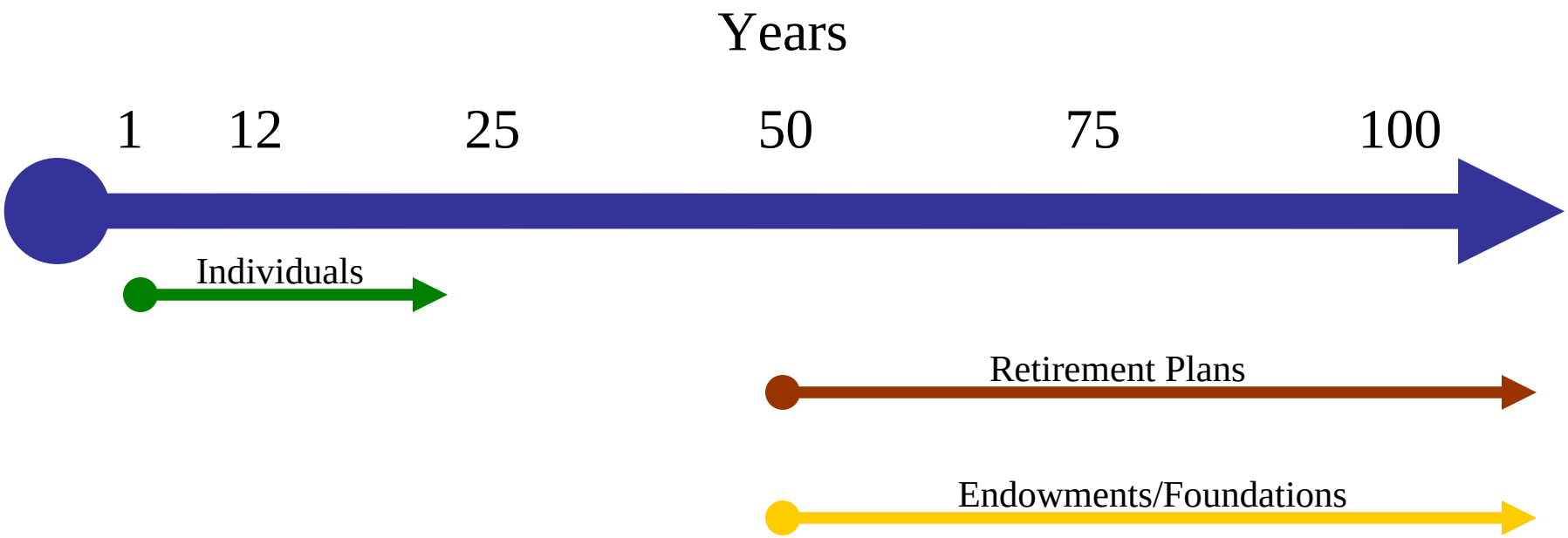
Modern Portfolio Theory

- Modern portfolio theory is the prism through which all modern investing decisions are viewed

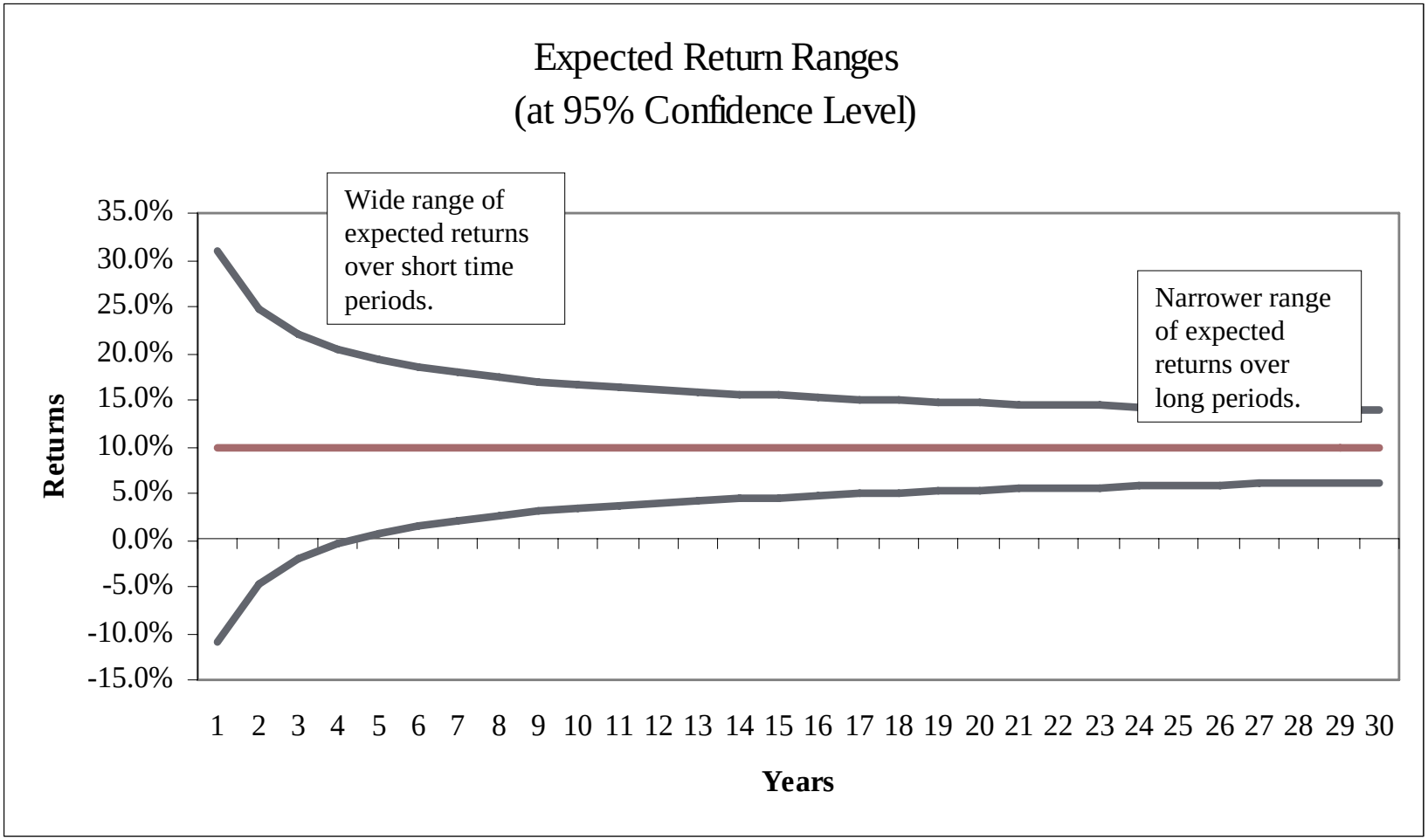


Investor Time Horizons

- An investor's time horizon is the most important consideration in selecting an appropriate asset allocation. Investors with a short time horizon should favor high-grade bonds and cash. Investors with a long time horizon should be able to withstand short term volatility. Therefore, more volatile asset classes that provide greater return are the most appropriate investment.



Return Uncertainty



- Return uncertainty is greatest in the short term. Put differently, volatility declines at the square root of time.

Capital Markets Considerations

Five threads run throughout any asset allocation decision. How these threads are woven together determines the strength and resiliency of any institutional portfolio. These five threads are the allocations among or between:

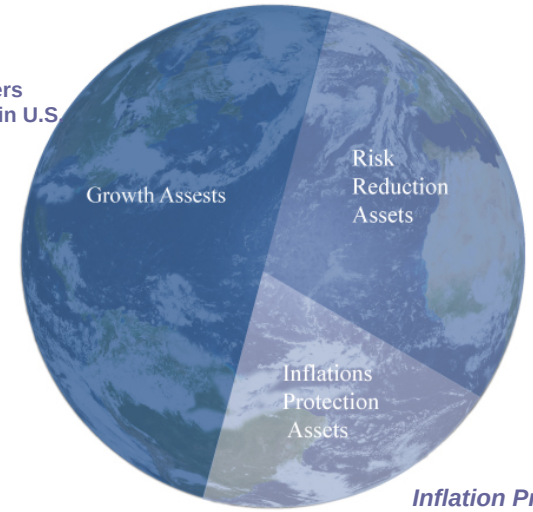
- stocks and bonds
- domestic and international markets
- value and growth stocks
- large-cap, mid-cap, and small-cap stocks
- traditional and alternative asset classes

The functional portfolio weaves these threads together:

- Growth Assets
- Risk Reduction Assets
- Inflation Protection Assets

Our View of the World's Asset Classes

Growth Assets
Underlying managers holding a portfolio in U.S. and foreign equity securities.



Risk Reduction
Underlying managers of U.S. and foreign fixed income securities and other diversified strategies.

Inflation Protection
Underlying managers of liquid real assets strategies, such as real estate, commodities or energy

Growth Assets

- U.S. vs. International (market cap weighting)
- Underweight small-cap international
- Overweight large-cap growth
- Overweight high quality growth
- Underweight value

Risk Reduction Assets

- 5% Global Fixed Income target
- Favor TIPS over nominal Treasuries
- 15% to 25% recommended target
- 30% to 60% absolute return and return enhancement strategies (within hedge funds)

Inflation Protection Assets

- 10% to 20% Real Assets target
- 2/3rd in real estate
- 1/3rd in natural resources
- Tilt near-term towards natural resources

KRS Investment Policy – Risk Tolerance

Several kinds of risk exist in an investment portfolio:

- Volatility risk (short-term) – The variability of returns.
- Strategic risk (long-term) – The probability of missing the return need.

Risk and Return Measure	*Current Policy (%)*	*Hammond Research (%)*	*Type of Risk*
Long-Term Expected Return	7.4	8.9	
Standard Deviation	±11.9	±10.9	Short -Term
Return Range	-4.5 to 19.3	-2.0 to 19.8	Short -Term
Lowest Expected Return – 1 year	-20.4	-15.9	Short -Term
Probability of Achieving Goal (7.75%)	46.2	65.8	Long -Term

KTRS Investment Policy – Risk Tolerance

Several kinds of risk exist in an investment portfolio:

- Volatility risk (short-term) – The variability of returns.
- Strategic risk (long-term) – The probability of missing the return need.

Risk and Return Measure	*Current Policy (%)*	*Hammond Research (%)*	*Type of Risk*
Long-Term Expected Return	8.1	8.9	
Standard Deviation	±12.1	±10.9	Short -Term
Return Range	-4.0 to 20.2	-2.0 to 19.8	Short -Term
Lowest Expected Return – 1 year	-19.2	-15.9	Short -Term
Probability of Achieving Goal (7.5%)	57.5	65.8	Long -Term

2007 NACUBO Study – Asset Allocation

Investment Pool Asset Allocation (%) *As of June 30, 2007*							
Responding Institutions (778)	***U.S. Stocks***	***Int'l Stocks***	***Fixed and Cash***	***Private Equity***	***Hedge Funds***	***Real Assets***	***Other***
In Aggregate:							
Equal-Weighted Mean	42.1	15.4	22.1	3.2	10.6	4.9	1.4
Dollar-Weighted Mean	26.7	20.8	14.1	9.0	18.2	10.2	1.0
By Investment Pool Size: *(Equal-Weighted Mean)*							
Less than or equal to $25 million	49.3	10.2	33.9	0.6	2.9	2.1	0.9
$26 million to $50 million	50.7	12.4	24.3	0.6	6.9	3.8	1.0
$51 million to $100 million	45.2	14.9	23.0	1.6	8.7	4.9	1.8
$101 million to $500 million	38.8	17.8	17.9	3.9	13.8	5.8	2.0
$501 million to $1 billion	30.4	20.1	15.7	7.7	17.7	7.7	0.8
Over $1 billion	25.7	21.3	12.8	10.4	20.5	8.6	0.6
KRS Pension Fund	*38.4*	*18.4*	*36.3*	*3.5*	*0.0*	*3.5*	*0.0*
KRS Insurance Fund	*55.5*	*20.4*	*18.3*	*2.9*	*0.0*	*2.9*	*0.0*
KTRS	*58.4*	*6.7*	*32.4*	*0.0*	*0.0*	*2.5*	*0.0*
By Type: *(Equal-Weighted Mean)*							
Public	42.4	14.7	26.5	2.6	8.4	4.1	1.6
Independent	42.0	15.8	19.8	3.5	11.9	5.4	1.4

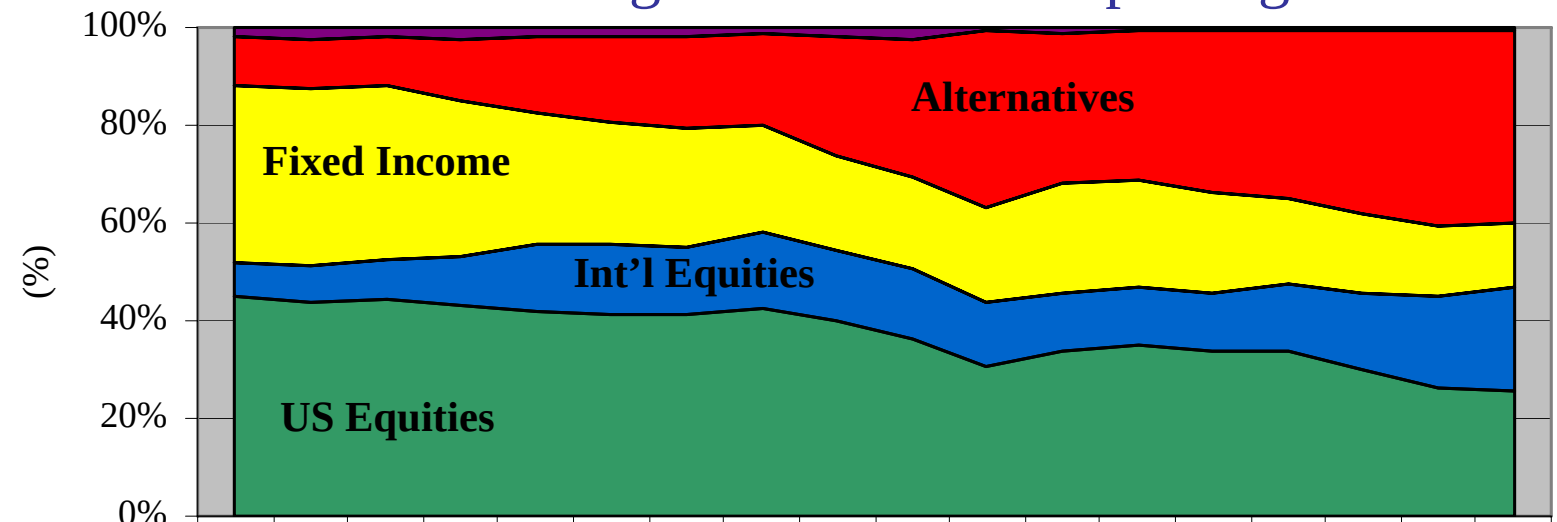
Source: NACUBO: National Association of College and University Business Officers

2007 NACUBO Study – Nominal Returns

Investment Pool Nominal Returns (%) ***Years Ended June 30, 2007***				
	Average Annual Compound Returns			
	1 Year 2007	***3 Years 2005-2007***	***5 Years 2003-2007***	***10 Years 1998-2007***
In Aggregate:				
Equal-Weighted Mean	17.2	12.4	11.1	8.6
Dollar-Weighted Mean	21.5	16.8	14.4	11.7
Median	17.5	12.3	11.3	8.4
By Endowment Size: *(Equal-Weighted mean)*				
Less than or equal to $25 million	14.1	9.7	8.8	6.7
$26 million to $50 million	15.9	10.7	9.8	7.3
$51 million to $100 million	16.7	11.9	10.8	7.9
$101 million to $500 million	18.0	13.1	11.5	8.5
$501 million to $1 billion	19.3	14.2	12.3	9.5
Over $1 billion	21.3	16.4	13.9	11.1
KRS Pension Fund	*15.3*	*11.4*	*10.4*	*8.1*
KRS Insurance Fund	*19.3*	*13.7*	*12.3*	*8.4*
KTRS	*15.2*	*9.3*	*8.5*	*7.1*
By Type: *(Equal-Weighted mean)*				
Public	16.8	11.9	10.8	8.2
Independent	17.5	12.7	11.3	8.8

Source: NACUBO: National Association of College and University Business Officers

Asset Allocation for the Largest NACUBO Reporting Institutions



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Other	2	2.2	1.9	2.3	1.7	1.6	1.8	1.5	2	2.3	0.6	1.1	0.5	0.7	0.7	0.4	0.5	0.6
Alternatives	10	10.2	9.7	12.6	16.1	18	19	18.5	24.4	28.2	36.4	31	30.6	33.2	34.2	37.5	40.4	39.5
Fixed Income	36.1	36.3	35.9	31.9	26.3	25	24.1	21.8	19	18.7	19.3	22.5	22.3	20.4	18	16.3	14.2	12.8
Int'l Equities	6.6	7.8	8.1	10.2	14.3	14.1	14	15.9	14.7	14.5	13.2	11.5	11.7	12.2	13.3	16	18.6	21.3
US Equities	45.3	43.5	44.4	43	41.6	41.3	41.1	42.3	39.9	36.3	30.5	34.1	34.9	33.9	34.1	29.9	26.3	25.7

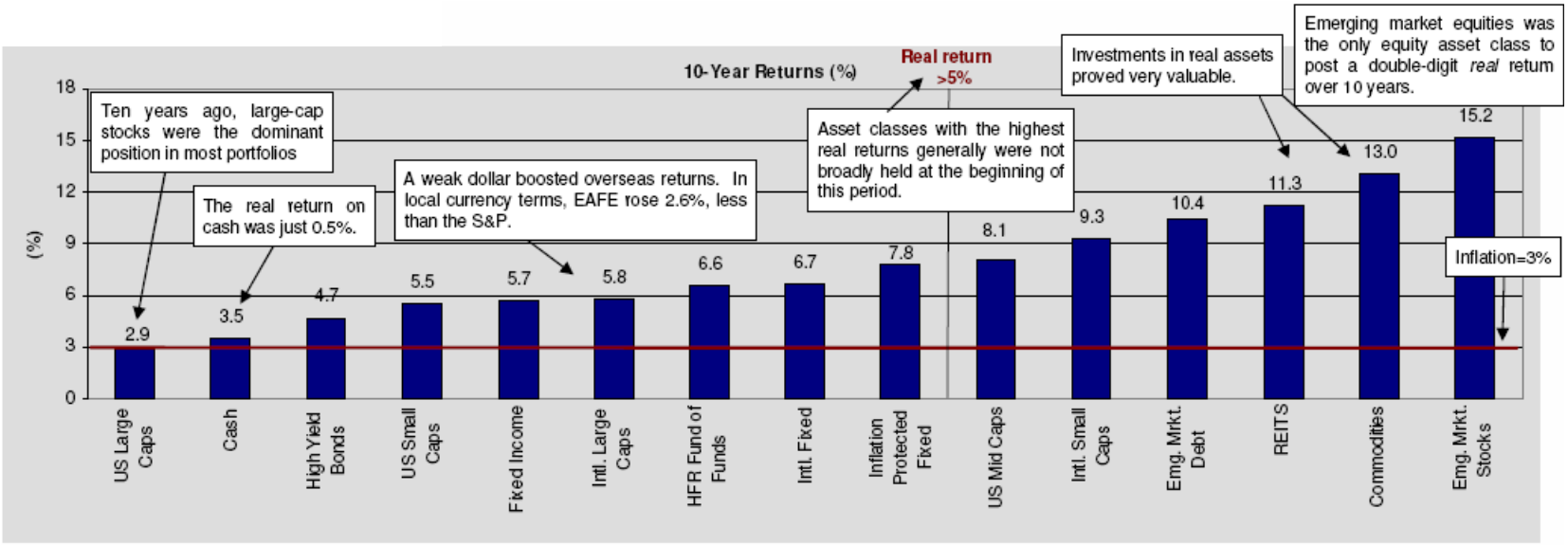
Notes: From 1990 through 1997, largest NACUBO reporting institution category exceeded $400 million. For 1998 through 2007, the largest category exceeded $1 billion.

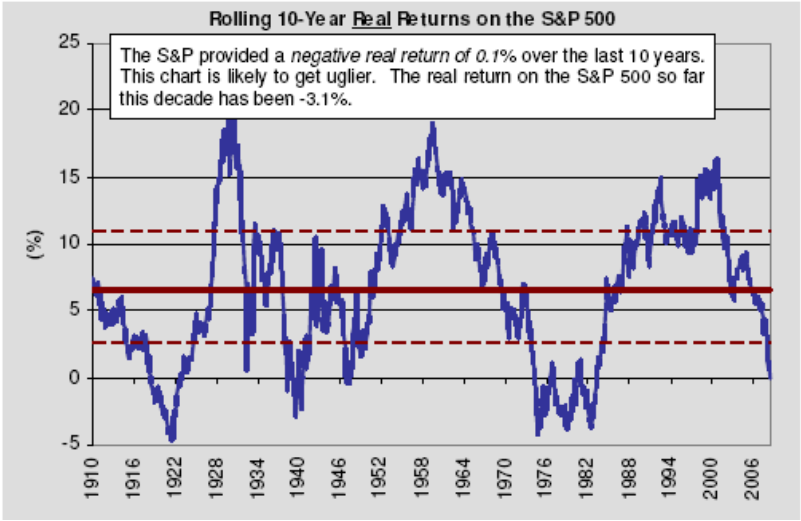
- Since 1990, the largest NACUBO reporting institutions have significantly altered their asset allocations.
- Allocations to international equities and, especially, alternative investments have increased, while allocations to U.S. equities and fixed income have trended downward.
- These trends may be the result of institutional investors seeking higher returning or less-correlated asset classes.

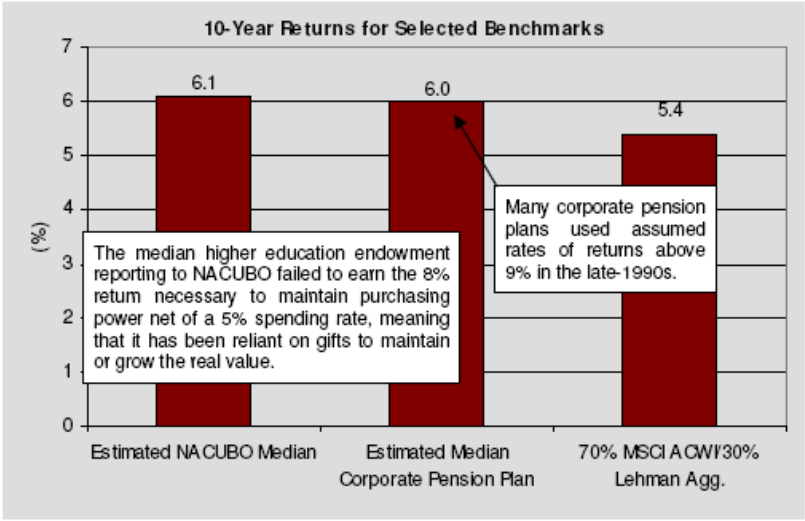
Asset Allocation Strategy

- Low return environment – most institutions' return targets may not be achieved.
- U.S. stocks are priced to provide a 5-7% nominal return in the future
- International stocks remain relatively attractive, but their potential for outperforming U.S. equities has decreased
- Interest rates are low and inflation is increasing at alarming rates
- We believe that alternatives offer significant diversification advantages
- Conclusion: **Diversify Globally and Consider Innovative Solutions**

Ten Lean Years for Investors *(as of 6/30/08)*







Asset Allocation Strategy *(continued)*

- We live in a low return world. Real interest rates (~1.5%) are low and equity risk premiums are below the long-term average. **A traditional 60% stock / 40% bond portfolio is very unlikely to earn a typical 5% real return requirement to offset spending over the coming decade.**
- With current real yields below 1.5%, Treasuries are far from enough to cover most institutions' return need. Credit spreads have widened materially since bottoming June 2007. Investment-grade credit is attractive relative to Treasuries.
- Assuming US stocks continue to trade at today's elevated valuations, they are priced to provide a 4.5% real return in the future. A contraction in valuations risks pushing the real return even lower. Unlike several years ago, there are now few opportunities to add value within the U.S. market.
  - At the beginning of 2000, value was relatively cheap, but now looks overvalued relative to the broad market. At the beginning of 1999, small-caps (particularly small-value) were very attractive relative to large-caps; but they now appear overvalued.
  - Hammond Associates has historically tilted towards value and small-caps due to academic evidence on their long-term performance advantage. We do not recommend tilts towards these areas at this time. Instead, we recommend tilting towards large-cap growth stocks, with a particular focus on high quality growth stocks.
- International equities remain more attractive than US equities, but offer far less potential for outperformance than they did earlier this decade.
  - On a valuation basis international developed stocks are modestly more attractively priced than U.S. stocks.
  - The dollar was massively overvalued several years ago, and subsequently plunged. Looking forward, the dollar likely needs to fall further on a trade-weighted basis because the trade deficit remains unsustainably high. However, European currencies that dominate the MSCI EAFE index look overvalued versus the buck. The dollar is most likely to weaken against Asian currencies.
  - The valuations of emerging market stocks appear stretched. We believe they still offer the highest long-term return potential among equity asset classes, but the downside risk is increasing. In particular, we are concerned about their reliance on developed economies for economic and profit growth.
  - Hammond Associates recommends avoiding home country bias and weight US and international similar to how they appear in global markets (43% US / 57% international).

Asset Allocation Strategy *(continued)*

- The flood of money into alternative asset classes has reduced opportunities. However, with traditional asset classes still priced to provide very low returns, we believe alternative asset classes should play a significant role in a diversified portfolio.
  - Hedge funds manage well over $1 trillion in capital (and much more when leverage is considered). The reward for investing in common arbitrage opportunities, such as convertible and merger, has diminished. Many hedge funds are moving into more illiquid assets and that trend is likely to continue. While aggregate returns from hedge funds are likely to be below most investors' expectations, we are confident in the small group of managers that we work with.
  - The credit crunch and uncertain future exit valuations are risks for buyouts. We are focusing on small and mid-market funds that bring operating expertise, while avoiding larger funds that are more dependant on debt. Venture capital and distressed debt offer more promise.
  - A risk of rising capitalization rates and higher debt costs pose risk for real estate portfolios. We continue to focus on value-added partnerships. Energy remains attractive long-term investment.
- Conclusion: **Diversify**
  - There's little reason to make large bets on particular asset classes or strategies when the expected return premium is modest and there is a high potential for error.
  - Watch for new opportunities and capitalize on them.

Asset Allocations Analysis

Asset Class	*KRS Proposed L-T Target*	*KRS Actual Allocation 6/30/08*	*KTRS 2008-2009 Target*	*KTRS Act. Allocation 6/30/08*	*70% S&P/ 30% LBAG*	*NACUBO >$1B*	*Yale Policy 6/30/07*	*Harvard Policy 1/1/08*	*OFM Peer Universe Average*	*RM Public Plans > $1B*	*HA Research Portfolio*
	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*
Growth Assets											
US All-Cap Stocks	30%					26%	11%	12%	44%	34%	
US Large Stocks		29%	45%	36%	70%						7%
US Large Growth Stocks				5%							4%
US Large Quality Stocks											4%
US Large Value Stocks				7%							
US Mid Stocks			5%	4%							
US Small Stocks		5%	3%	3%							
US Equity	*30%*	*34%*	*53%*	*55%*	*70%*	*26%*	*11%*	*12%*	*44%*	*34%*	*15%*
Intl Large Stocks	22%	20%	11%	9%		16%	6%	12%	18%	20%	16%
Intl Emerging Market Stocks	5%					5%	9%	10%			4%
Intl Equity	*27%*	*20%*	*11%*	*9%*	*0%*	*21%*	*15%*	*22%*	*18%*	*20%*	*20%*
Private Equity / Special Situations	7%	7%	2%	0%		10%	19%	11%	3%	8%	15%
Total Growth Assets	**64%**	**61%**	**66%**	**64%**	**70%**	**57%**	**45%**	**45%**	**65%**	**61%**	**50%**
Risk Reduction Assets											
Cash	1%	2%	2%	2%		2%		-5%	2%	4%	
US / Global Fixed Income	10%	22%	28%	31%	30%	11%	4%	8%	27%	30%	10%
US High Yield Fixed	5%							1%			
Intl Emg Market Debt	5%										
Hedge Funds						21%	23%	18%			20%
Total Risk Reduction Assets	**21%**	**24%**	**30%**	**33%**	**30%**	**34%**	**27%**	**22%**	**29%**	**33%**	**30%**
Inflation Protection Assets											
US Inflation Protected Fixed	5%	13%							2%		5%
Real Assets	10%	3%	4%	4%		9%	28%	33%	5%	6%	15%
Total Inflation Protection Assets	**15%**	**16%**	**4%**	**4%**	**0%**	**9%**	**28%**	**33%**	**7%**	**6%**	**20%**
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Asset Allocations Analysis

Asset Class	*KRS Proposed L-T Target*	*KRS Actual Allocation 6/30/08*	*KTRS 2008-2009 Target*	*KTRS Act. Allocation 6/30/08*	*70% S&P/ 30% LBAG*	*NACUBO >$1B*	*Yale Policy 6/30/07*	*Harvard Policy 1/1/08*	*OFM Peer Universe Average*	*RM Public Plans > $1B*	*HA Research Portfolio*
	A	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*I*	*J*	*K*
Return											
L/T Compound Expected Return	8.2%	7.5%	7.4%	7.2%	7.1%	8.7%	9.7%	9.4%	7.5%	7.8%	8.9%
10 Yr. Horizon Expected Return	7.5%	6.7%	6.6%	6.3%	6.2%	8.0%	9.0%	8.8%	6.7%	7.0%	8.5%
Risk (L/T Expectations)											
Standard Deviation (1 Yr.)	±12.3%	±10.8%	±11.9%	±11.6%	±12.9%	±11.3%	±12.0%	±11.7%	±11.5%	±11.2%	±10.9%
Probability of Loss Year	23.4%	22.9%	24.9%	24.8%	27.2%	20.6%	19.5%	19.6%	24.0%	22.8%	19.3%
Probability of 10% or Worse Loss	6.2%	4.7%	6.4%	6.1%	8.4%	4.4%	4.5%	4.4%	5.8%	5.1%	3.7%
Lowest Likely Return (1 Yr.)	-19.7%	-17.1%	-19.6%	-19.1%	-22.2%	-17.0%	-17.6%	-17.2%	-18.7%	-17.7%	-15.9%
Sharpe Ratio	0.34	0.32	0.29	0.28	0.24	0.41	0.47	0.46	0.31	0.34	0.45
Risk (10-Yr Horizon Expectations)											
Probability of Loss Year	25.3%	24.9%	27.2%	27.4%	29.5%	22.4%	21.0%	21.1%	26.3%	24.9%	20.4%
Probability of 10% or Worse Loss	7.0%	5.4%	7.4%	7.1%	9.5%	5.0%	5.0%	4.9%	6.7%	5.8%	4.0%
Lowest Likely Return (1 Yr.)	-20.5%	-17.8%	-20.4%	-19.9%	-23.1%	-17.7%	-18.2%	-17.8%	-19.5%	-18.5%	-16.3%
Sharpe Ratio	0.32	0.30	0.26	0.25	0.21	0.40	0.46	0.45	0.28	0.31	0.46
Probability of Achieving 7.5% Goal Return											
Based on L/T Compound Return	57.5%	49.5%	48.9%	45.7%	45.7%	63.0%	72.1%	69.6%	50.4%	53.1%	65.8%
Based on 10 Yr. Horizon Return (10 Yr.)	49.8%	40.4%	40.0%	35.9%	37.2%	55.3%	66.0%	63.5%	41.3%	44.7%	61.2%
Probability of Achieving 7.75% Goal Return											
Based on L/T Compound Return	54.9%	46.6%	46.2%	44.3%	43.2%	60.2%	69.8%	67.1%	47.6%	50.3%	63.1%
Based on 10 Yr. Horizon Return (10 Yr.)	47.3%	38.3%	37.5%	34.9%	34.9%	52.5%	63.5%	60.9%	38.7%	41.9%	58.3%

Long-Term Asset Class Expectations

Asset Class	Compound Expected Return	Expected Standard Deviation
Growth Assets		
US Large Stocks	7.5	17.5
US Mid Stocks	8.0	19.0
US Small Stocks	8.5	22.0
Intl Large Stocks	7.5	18.0
Intl Small Stocks	8.5	19.0
Intl Emerging Market Stocks	9.5	27.0
Private Equity	12.5	27.0
Risk Protection Assets		
US Fixed Income	5.2	5.5
Cash	4.0	0.5
Hedge Funds	8.0	7.0
Inflation Protection Assets		
US Inflation Protected Bonds	4.7	5.0
Real Assets	8.5	12.5

This represents our long-term expected return on stocks when they are priced at equilibrium. Current valuations appear to be above equilibrium.

Small-cap stocks are expected to outperform large-cap stocks by 1% and value stocks are expected to outperform broad stock allocations.

Over the long-term, we expect US stocks and international developed market stocks to provide similar returns.

We expect cash to earn 4.0% nominal (based on 2.5% inflation) over the long-term. All other asset class returns are built off the cash rate.

Inflation-protected bonds are expected to underperform a broad US fixed income allocation (as proxied by the Lehman Aggregate Bond index) because a broad fixed allocation has exposure to credit spreads.

Methodology for Determining Asset Class Expectations

Our approach to developing long-term forecasts blends realized historical results and an examination of current conditions. In developing the forecasts, we begin by averaging historical data for the longest period available to determine how much investors have been rewarded for exposure to risk factors in the past. We then use internal and external research to identify structural reasons that risk premiums in the future might be different than those experienced in the past, and adjust our forecasts accordingly. This methodology generally results in lower return forecasts, particularly for equity asset classes, than have been experienced in the past.

Note: The return expectations do not include manager alpha except for absolute return strategies. The expected return in excess of cash for absolute return strategies consists mostly of expected alpha.

10-Year Horizon Expected Returns

Asset Class	L/T Expected Return	10-Year Horizon Returns
Growth Assets		
US Large Stocks	7.5	6.5
US Large Value Stocks	8.0	5.5
US Large Growth Stocks	7.0	7.5
US Large Quality Stocks	8.0	8.0
US Mid Stocks	8.0	6.0
US Small Stocks	8.5	5.5
US Small Value Stocks	9.5	5.5
Intl Large Stocks	7.5	7.5
Intl Small Stocks	8.5	6.5
Intl Emerging Market Stocks	9.5	6.5
Private Equity	12.5	11.5
Risk Protection Assets		
Cash	4.0	3.5
Fixed Income	5.2	4.6
Hedge Funds	8.0	8.0
Inflation Protection Assets		
US Inflation Protected Bonds	4.7	3.9
Real Assets	8.5	8.5

10-Year Expectations – Rationale

- The long-term expectations represent the expected returns of asset classes at equilibrium. They are an estimate of what investors require to invest in each asset class, given the risk, in a normal interest rate environment. They are not affected by current valuations.

- Given their lofty valuations, many asset classes appear to be priced above equilibrium. In other words, their current expected return is below the equilibrium expected return. The horizon expectations are an estimate of the return over the next 10-years assuming all asset classes finish the period at equilibrium.

- Equities are priced to provide low returns in the future. At equilibrium real interest rates, we estimate that the S&P 500 should trade at a normalized P/E ratio of roughly 20. At a P/E ratio of 20, stocks would be priced to provide a risk premium to long-term TIPS bonds of 2.5%.

- If the normalized P/E ratio on the S&P 500 falls to 20 over the next 10 years, we estimate that the S&P 500 will earn a nominal return of 5.5%, versus the long-term expected return of 7.5%.

Correlation Assumptions

	US Large Stocks	US Mid Stocks	US Small Stocks	REITs	Intl Large Stocks	Intl Small Stocks	Intl Emerging Market Stocks	US Fixed Income	US Inflation Protected Fixed	US High Yield Fixed	Cash	Real Assets	Private Equity	Hedge Funds
US Large Stocks	-	0.90	0.80	0.50	0.65	0.50	0.60	0.35	0.20	0.55	(0.05)	0.35	0.70	0.35
US Mid Stocks		-	0.90	0.50	0.60	0.50	0.60	0.30	0.20	0.55	(0.05)	0.35	0.75	0.35
US Small Stocks			-	0.55	0.55	0.50	0.55	0.25	0.15	0.60	(0.10)	0.35	0.80	0.40
Intl Large Stocks					-	0.85	0.60	0.20	0.10	0.40	(0.10)	0.30	0.50	0.25
Intl Small Stocks						-	0.60	0.15	0.10	0.40	(0.10)	0.30	0.50	0.30
Intl Emerging Market Stocks							-	0.10	0.10	0.50	(0.15)	0.45	0.45	0.40
US Fixed Income								-	0.60	0.40	0.00	0.15	0.25	0.30
US Inflation Protected Fixed									-	0.30	0.10	0.35	0.15	0.20
US High Yield Fixed										-	(0.10)	0.25	0.60	0.40
Cash											-	0.00	(0.10)	0.10
Real Assets												-	0.50	0.30
Private Equity													-	0.30
Hedge Funds														-

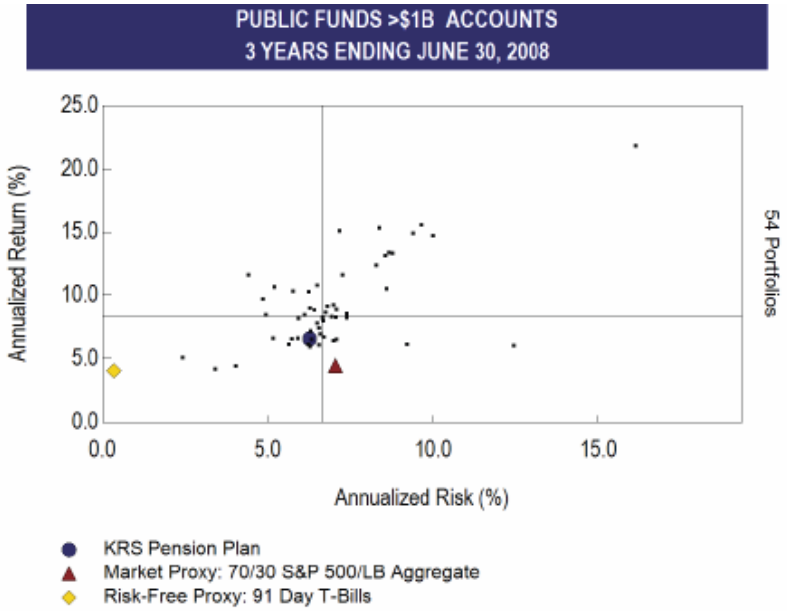
- **Correlation coefficients** measure the degree of co-movement between two asset classes. A correlation of 1.00 indicates that both assets move in lock-step with one another, while a correlation of (1.00) suggests that the assets move in opposite directions. A correlation of 0 means that there is no relation.

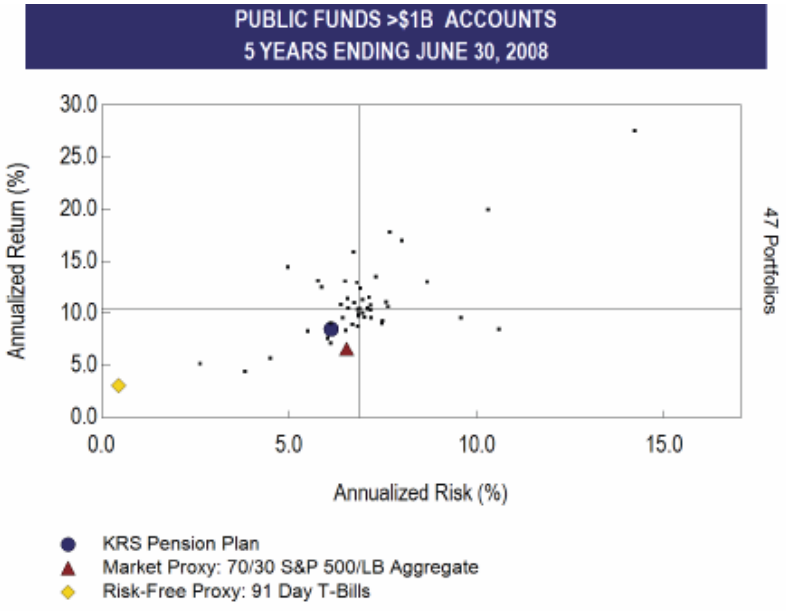
- Diversified portfolios take advantage of the tendency of asset classes to behave in different ways relative to each other. Asset classes with low correlations to one another can be combined to produce portfolios with less risk than any specific asset class displays on a stand-alone basis.

Glossary of Terms

- **10-Yr Horizon Return** - The 10-year mean reversion return represents our best estimate of returns over the next 10 years. We assume that normalized P/E ratios and interest rates revert to their equilibrium levels over the next 10-years.
- **Net Average Expected Return** - The average return in the portfolio's distribution of possible portfolio returns, net of indexed management fees. In any one-year period, there is a 50% chance that the return will be below the expected return and a 50% chance that the return will be above the expected return.
- **Net Compound Expected Return** - The median return of possible multi-year portfolio returns, net of indexed management fees. For example, in a ten-year period, there is a 50% chance that the annualized return will be below the median expected return and a 50% chance that the annualized return will be above median expected return.
- **Standard Deviation** - This statistic simply quantifies the expected variability of returns around their mean. Both returns *above* and *below* the expected return are included in this risk measure. There is roughly a two out of three chance that the return in any given year will fall within the range bounded by the expected return plus or minus the standard deviation.
- **Sharpe Ratio** - The Sharpe Ratio is a measure of risk-adjusted returns. It is the amount of return obtained (above the risk-free rate) for each unit of risk incurred; therefore, higher Sharpe Ratios indicate a more favorable reward/risk tradeoff. Mathematically, it is the expected return of the portfolio less the risk-free rate divided by the standard deviation.
- **Lowest Likely Return**– Also known as the Value at Risk (VAR), VAR indicates the lowest return we would expect from the portfolio in 99 periods out of 100. In one period out of 100, we would expect the return to be worse.
- **Downside Probability** - The probability of *missing* the goal return over the period. A 20 year downside probability of 33% indicates that there is a one in three chance of missing the goal return over a twenty- year horizon.

Risk/Return Profile – KRS Pension Plan vs. Public Funds > $1b





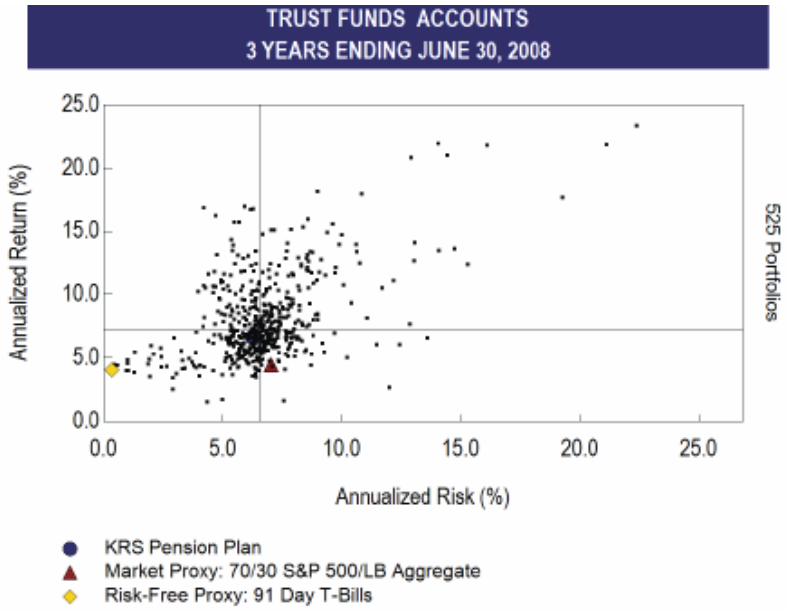
Risk vs. Return for 3 Years Ending June 30, 2008

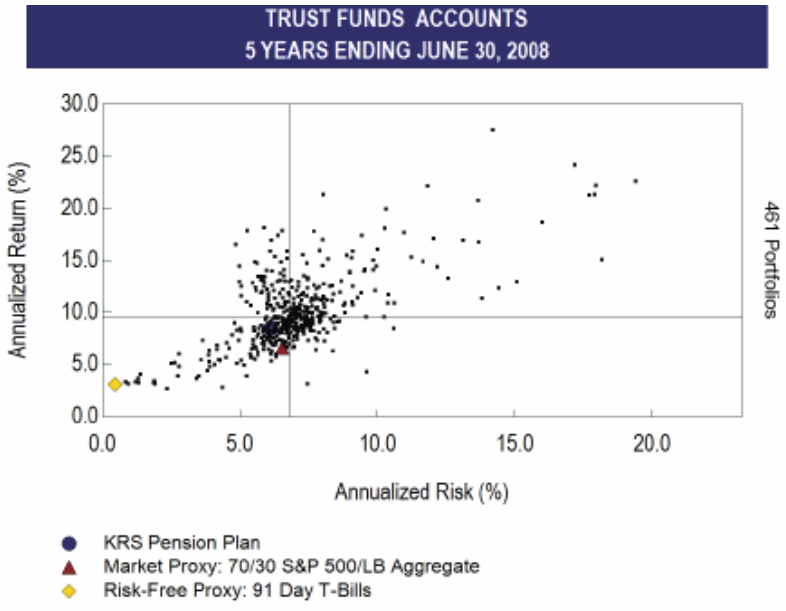
Rank within Public Funds >$1B (peer)	Annualized Return	Percentile Rank	Standard Deviation
KRS Pension Plan	6.6%	77	6.3%
70/30 S&P 500/LB Aggregate	4.5%	98	7.0%
Median for this Universe	8.4%		6.7%

Risk vs. Return for 5 Years Ending June 30, 2008

Rank within Public Funds >$1B (peer)	Annualized Return	Percentile Rank	Standard Deviation
KRS Pension Plan	8.5%	85	6.1%
70/30 S&P 500/LB Aggregate	6.6%	95	6.5%
Median for this Universe	10.4%		6.8%

Risk/Return Profile – KRS Pension Plan vs. Total Plan Universe





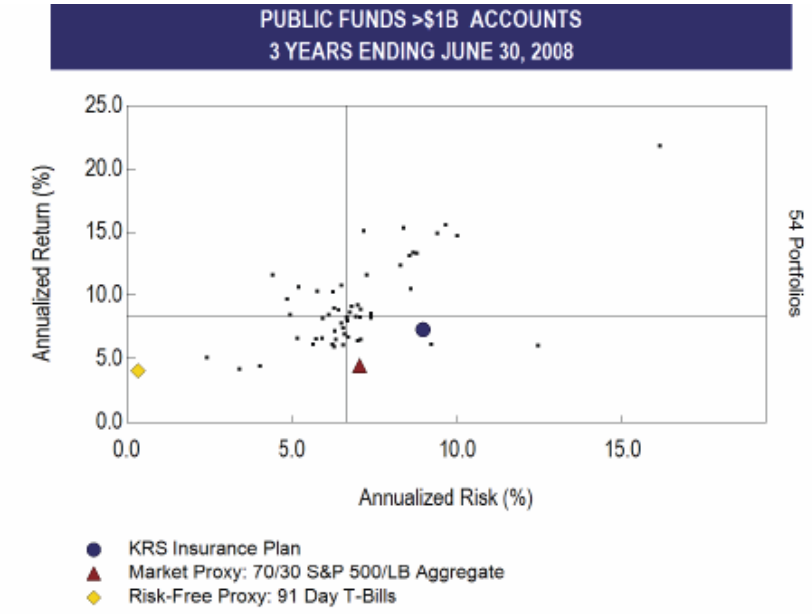
Risk vs. Return for 3 Years Ending June 30, 2008

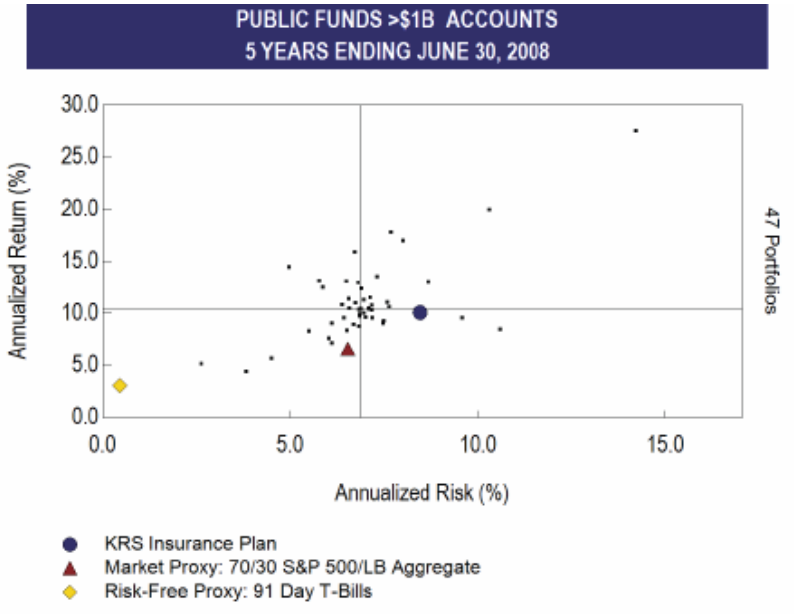
Rank within Trust Funds (peer)	Annualized Return	Percentile Rank	Standard Deviation
KRS Pension Plan	6.6%	62	6.3%
70/30 S&P 500/LB Aggregate	4.5%	93	7.0%
Median for this Universe	7.2%		6.6%

Risk vs. Return for 5 Years Ending June 30, 2008

Rank within Trust Funds (peer)	Annualized Return	Percentile Rank	Standard Deviation
KRS Pension Plan	8.5%	69	6.1%
70/30 S&P 500/LB Aggregate	6.6%	89	6.5%
Median for this Universe	9.5%		6.8%

Risk/Return Profile – KRS Insurance Plan vs. Public Funds > $1b





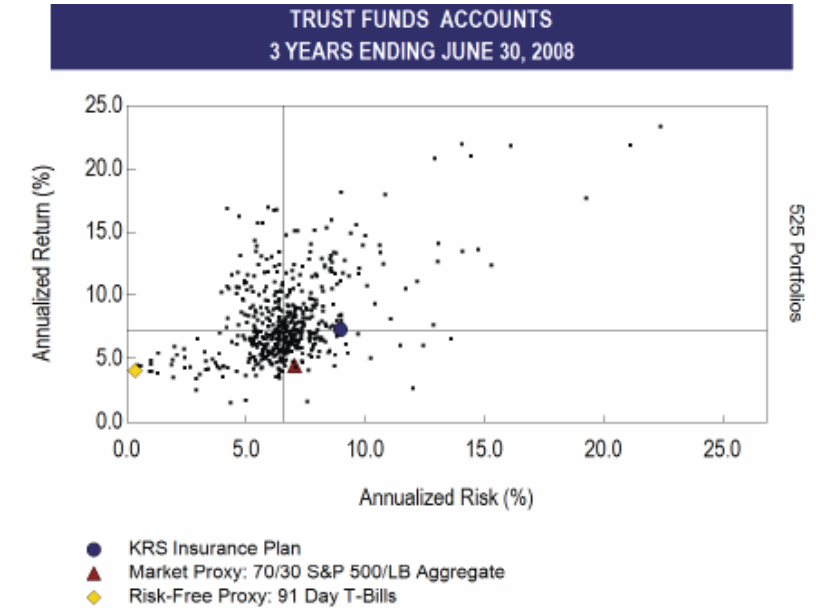
Risk vs. Return for 3 Years Ending June 30, 2008

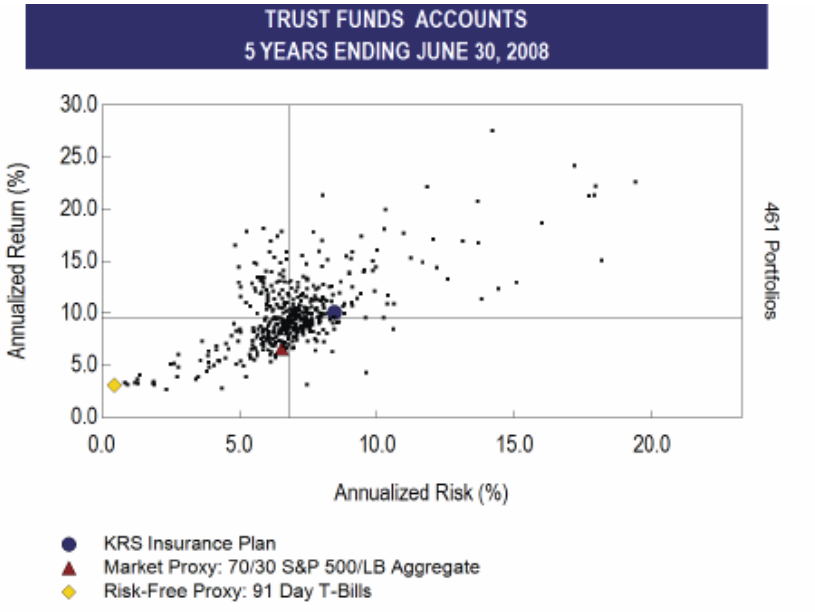
Rank within Public Funds >$1B (peer)	Annualized Return	Percentile Rank	Standard Deviation
KRS Insurance Plan	7.3%	68	9.0%
70/30 S&P 500/LB Aggregate	4.5%	98	7.0%
Median for this Universe	8.4%		6.7%

Risk vs. Return for 5 Years Ending June 30, 2008

Rank within Public Funds >$1B (peer)	Annualized Return	Percentile Rank	Standard Deviation
KRS Insurance Plan	10.1%	59	8.5%
70/30 S&P 500/LB Aggregate	6.6%	95	6.5%
Median for this Universe	10.4%		6.8%

Risk/Return Profile – KRS Insurance Plan vs. Total Plan Universe





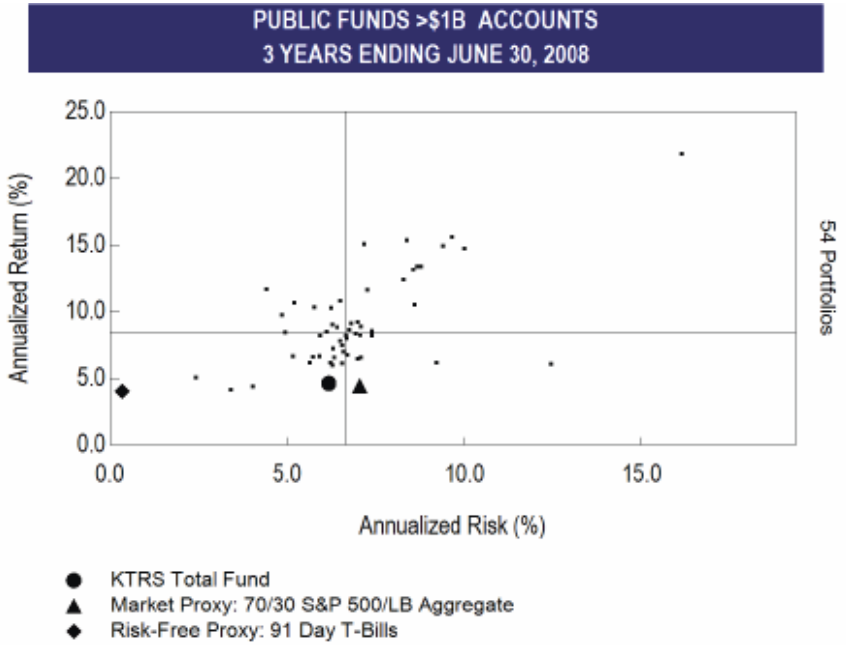
Risk vs. Return for 3 Years Ending June 30, 2008

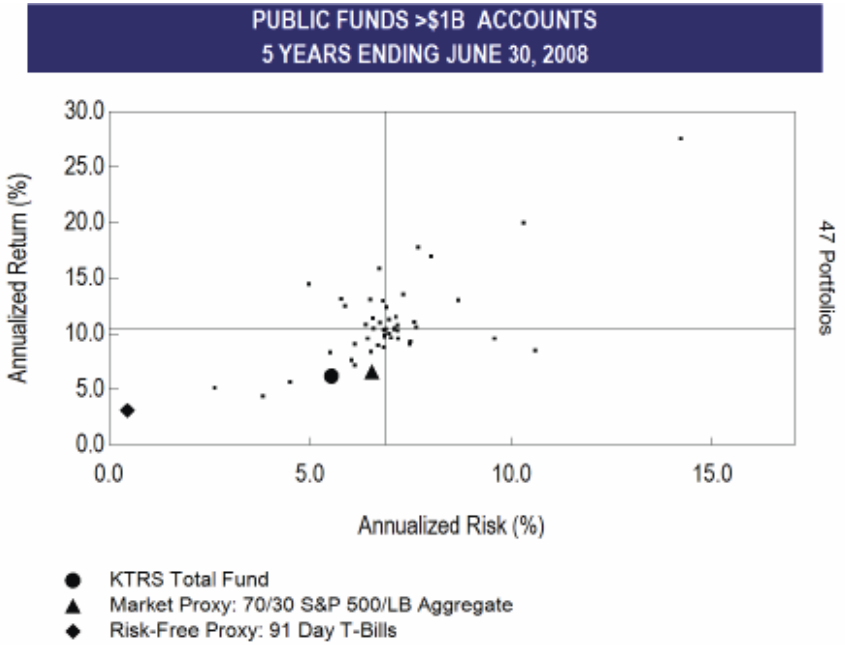
Rank within Trust Funds (peer)	Annualized Return	Percentile Rank	Standard Deviation
KRS Insurance Plan	7.3%	48	9.0%
70/30 S&P 500/LB Aggregate	4.5%	93	7.0%
Median for this Universe	7.2%		6.6%

Risk vs. Return for 5 Years Ending June 30, 2008

Rank within Trust Funds (peer)	Annualized Return	Percentile Rank	Standard Deviation
KRS Insurance Plan	10.1%	42	8.5%
70/30 S&P 500/LB Aggregate	6.6%	89	6.5%
Median for this Universe	9.5%		6.8%

Risk/Return Profile – KTRS Total Fund vs. Public Funds > $1b





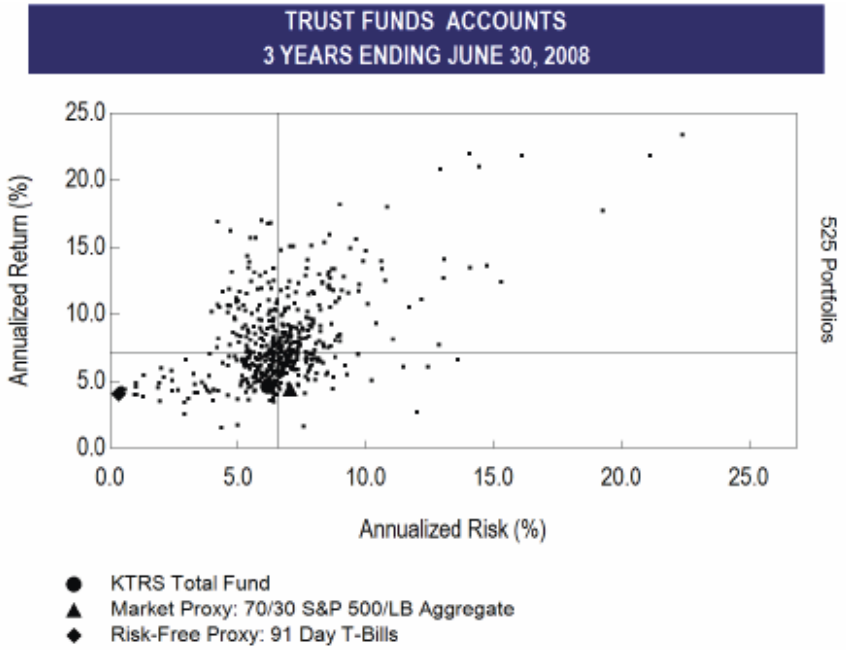
Risk vs. Return for 3 Years Ending June 30, 2008

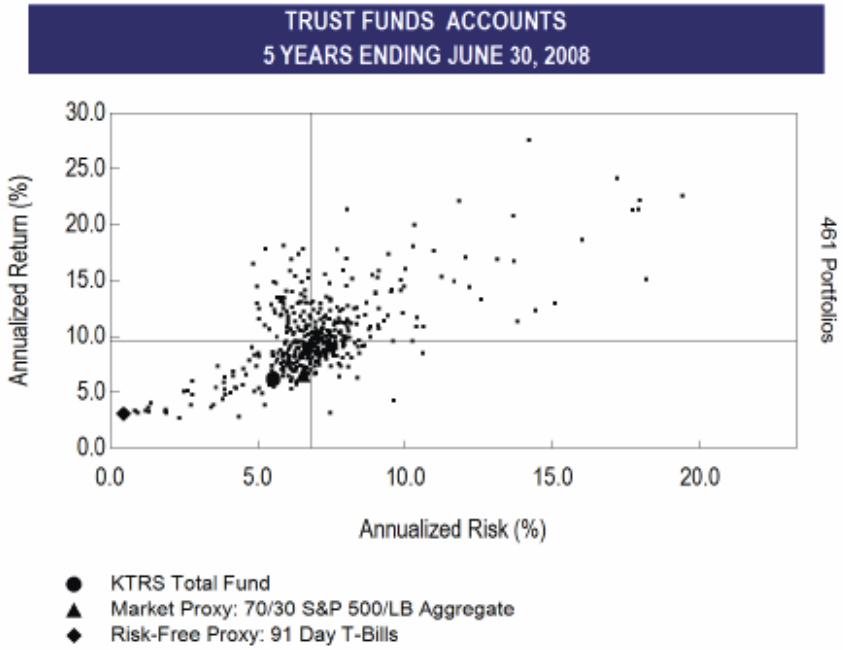
Rank within Public Funds >$1B (peer)	Annualized Return	Percentile Rank	Standard Deviation
KTRS Total Fund	4.6%	98	6.2%
Median for this Universe	8.4%		6.7%

Risk vs. Return for 5 Years Ending June 30, 2008

Rank within Public Funds >$1B (peer)	Annualized Return	Percentile Rank	Standard Deviation
KTRS Total Fund	6.2%	95	5.5%
Median for this Universe	10.4%		6.8%

Risk/Return Profile – KTRS Total Fund vs. Total Plan Universe





Risk vs. Return for 3 Years Ending June 30, 2008

Rank within Trust Funds (peer)	Annualized Return	Percentile Rank	Standard Deviation
KTRS Total Fund	4.6%	92	6.2%
Median for this Universe	7.2%		6.6%

Risk vs. Return for 5 Years Ending June 30, 2008

Rank within Trust Funds (peer)	Annualized Return	Percentile Rank	Standard Deviation
KTRS Total Fund	6.2%	91	5.5%
Median for this Universe	9.5%		6.8%

Effective Pension Fund Governance

- What constitutes “Best Practices in Pension Fund Governance”?
  - Management and Oversight
  - Accountability
  - Investment Policy

- How does pension fund governance affect fund performance?

- Bad governance practices have an economic cost = 2% per annum.[1]

1- Source: “The Three Grades of Pension Fund Governance Quality, Bad, Better, Best” K. Ambactsheer

Effective Pension Fund Governance *(continued)*

- What prevents private and public retirement systems from achieving best practices in pension fund governance?
  - Legal barriers
  - Organizational barriers
  - Competency barriers
  - Scale barriers

BARRIERS TO EXCELLENCE

Rank	Barrier	Cited %
1	Poor Decision Process	98%
2	Inadequate Resources	48%
3	Lack of Focus/Clear Mission	43%
4	Conservatism	35%
4	Insufficient Skill	35%
6	Inadequate Technology	13%
7	Conflicts	8%
7	Difficult Markets	8%
9	Lack of Innovation	5%
9	Suppliers	5%

Source: "Excellence Shortfall in Pension Fund Management: Anatomy of a Problem" by K. Ambactsheer, C. Boice, D. Ezra, J. McLaughlin

Effective Pension Fund Governance *(continued)*

- Four Key Attributes:
  - Trustee Structure – Trade off between “representative” and “expertise”
  - Operating Structure – Deliver results in a cost effective manner
  - Culture – Sense of urgency/high performance team
  - Scale – Bigger is better

Effective Pension Fund Governance *(continued)*

- Strong Board of Trustees is critical to an effective governance structure
- Selection process is key
  - Motivation
  - Expertise
    - Think strategically
    - Relevant skill/experience
      - Investments
      - Risk management
      - Audit
      - Actuarial/Human Resources

Effective Pension Fund Governance *(continued)*

- KRS Governance: 9 member Board of Trustees
  - 5 elected; 3 appointed; 1 ex officio
  - Investment committee: 5 Trustees
  - Investment expertise noted in one trustee biography

- KTRS Governance: 9 member Board of Trustees
  - 7 elected; 2 ex officio
  - Investment committee: 2 trustees and Executive Secretary
  - No investment expertise noted in trustee biographies

- Institutional investment best practices: Investment committee members with investment expertise.
  - Supplement with education

Effective Pension Fund Governance

- What constitutes “best practices in portfolio management”?
  - Active vs. passive
  - Internal vs. external
  - Marketable securities vs. illiquid partnerships
- Creating value through implementation (compensation for risk)
- CIO, staff and external advisors skill set is critical to success
- Is the portfolio behaving as expected? (asset/liability study)
  - Recommended every 3-5 years depending upon policy changes
  - KRS – July 2006
  - KTRS – June 2002, update expected in 2008-2009
- Is the portfolio behaving as expected? (benchmarks)
  - Yes – continue monitoring process
  - No – address the issue with appropriate resources (time, talent or terminations)

Appendix

Opportunity Cost Analysis

	KRS Pension Mkt (mill)	Pension FY Return	Russell Mellon, PF > $1 billion 25th Perc	Median	75th Perc	Actual - Median %	Actual - Median $ (mill)	Actual-25th Percen	KTRS Mkt (mill)	Pension FY Return	Russell Mellon, PF > $1 billion 25th Perc	Median	75th Perc	Actual - Median %	Actual - Median $ (mill)	Actual-25th Percen	S&P 500	Leh Agg	MSCI World Ex US
6/30/98	10,470.8								11,223.9								30.2%	10.5%	7.4%
6/30/99	11,946.2	14.3%	12.7%	11.2%	10.2%	3.1%	344.1		12,441.5	11.5%	12.7%	11.2%	10.2%	0.3%	35.5		22.7%	3.1%	18.8%
6/30/00	12,577.7	6.4%	14.1%	10.8%	8.9%	-4.4%	(538.3)		12,857.4	3.6%	14.1%	10.8%	8.9%	-7.2%	(910.8)		7.3%	4.6%	-23.8%
6/30/01	11,710.7	-5.4%	-2.1%	-5.9%	-7.3%	0.5%	59.5		12,524.0	-0.7%	-2.1%	-5.9%	-7.3%	5.2%	659.9		-14.9%	11.2%	-24.3%
6/30/02	10,853.8	-4.3%	-4.0%	-5.7%	-7.3%	1.4%	158.0		11,807.7	-4.1%	-4.0%	-5.7%	-7.3%	1.6%	194.7		-18.0%	8.6%	-8.9%
6/30/03	10,855.1	4.3%	5.6%	3.8%	2.9%	0.5%	53.2		12,098.2	4.8%	5.6%	3.8%	2.9%	1.0%	119.5		0.3%	10.4%	-4.9%
6/30/04	11,824.4	13.6%	18.8%	17.5%	15.0%	-3.9%	(444.5)		12,959.8	9.7%	18.8%	17.5%	15.0%	-7.8%	(977.3)		19.1%	0.3%	32.5%
6/30/05	12,345.7	9.3%	13.4%	11.1%	10.0%	-1.8%	(222.4)		13,555.8	7.5%	13.4%	11.1%	10.0%	-3.6%	(477.3)		6.3%	6.8%	15.0%
6/30/06	12,898.7	9.7%	14.7%	11.9%	9.6%	-2.2%	(280.2)		13,898.7	5.5%	14.7%	11.9%	9.6%	-6.4%	(878.5)		8.6%	-0.8%	27.3%
6/30/07	14,168.3	15.3%	19.1%	17.9%	16.5%	-2.6%	(355.9)		15,538.1	15.2%	19.1%	17.9%	16.5%	-2.7%	(397.4)		20.6%	6.1%	27.6%
6/30/08	12,886.6	-4.2%	-2.2%	-4.3%	-5.3%	0.1%	12.2		14,287.0	-5.8%	-2.2%	-4.3%	-5.3%	-1.5%	(223.7)		-13.1%	7.1%	-8.4%
							(1,214.4)								(2,640.0)				
1-Year		-4.2%	-2.1%	-4.3%	-5.4%	0.1%		-2.1%		-5.8%	-2.1%	-4.3%	-5.4%	-1.5%		-3.7%			
3-Years		6.6%	10.6%	8.4%	6.6%	-1.8%		-4.0%		4.6%	10.6%	8.4%	6.6%	-3.8%		-6.0%			
5-Years		8.5%	12.8%	10.7%	8.9%	-2.2%		-4.3%		6.2%	12.8%	10.7%	8.9%	-4.5%		-6.6%			
10-Years		5.6%	8.8%	6.6%	5.0%	-1.0%		-3.2%		4.5%	8.8%	6.6%	5.0%	-2.1%		-4.3%			